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18 April 1960

MEMORANDUM FOR: Office of Logistics/Procurement Division/Contract Branch

SUBJECT : Request for Increase in Scope with Additional Funds under Task RA of Contract RD-26 with [redacted] 25X1
[redacted] 25X1

1. Task RA under Contract RD-26 was established in January 1960 for the development of a reduced size incinerator for the destruction of papers and documents. It is now proposed that additional research be conducted to investigate selected additions and modifications to this reduced size incinerator and to incorporate in the unit certain changes in accordance with the contractor's proposal attached hereto.

2. Additional funds in the amount of $5,268.00 are to be made available to the contractor for the performance of this additional work. Charges are to be made against Allotment Number 0525-1009-4901. A period of three months will be required to complete the project.

3. For further information concerning this request, please contact the project engineer for this program, [redacted] Room 210, West 25X1
Outbuilding, extension [redacted] 25X1

[redacted] 25X1
Chief
TSD/Engineering Branch

Attachments:
TSD-913-27-1547-60
Proposal dtd 5 Apr 1960

APPROVED:

____
Research Director
Date

DD/P/TSD/EB/MC

Distribution:
Orig & 1 - Addressee
1 - Comptroller
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1 - [redacted] 25X1

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In replying please address

25X1

April 5, 1960

Dear Sir:

As a result of recent discussions with your technical representative, we hereby propose that a program of additional research be performed under Task Order No. [redacted], directed toward the further development of the experimental Model 2 incinerator.

The effort performed thus far under Task Order No. [redacted] concerned with the development of an experimental reduced-size, paper-burning incinerator (Model 2) based on the design of the Model 1 unit developed previously under Task Order No. Z. The research has progressed to the stage where the experimental unit functions satisfactorily at the anticipated burning rates of from 80 to 130 pounds per hour. During this phase of the experimentation, a readily available external blower and motor unit has been used as the source of combustion air, so as to facilitate the determination of the specific air-flow and -pressure requirements of this experimental reduced-size incinerator.

On the basis of the results obtained, the space reserved for the blower-motor unit in the lower part of the experimental incinerator appears to be adequate in size to accommodate a commercially available blower assembly which seems to have suitable characteristics. Consequently, your

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technical representative has suggested that consideration be given to additional research directed toward the investigation and possible incorporation of (1) a blower and motor unit within the outer shell of the experimental Model 2 unit immediately below the combustion chamber, in an attempt to achieve the compact configuration originally envisioned for this unit; and (2) suitable air-flow controls and/or indicators. Other modifications and additions which appear to be desirable and merit consideration include (1) the provision of an access or inspection door for the blower compartment, (2) the use of an interlock between the air throttle and the charging door, to insure that the air would be turned off before the charging door was opened, (3) the use of sound-absorption material suitably installed in the blower compartment, in an attempt to reduce the operating noise level, and (4) provisions for reducing the radiation of heat from the lower part of the stack to the immediate surroundings.

A proposed program of research directed toward achieving these aims is described in the following.

Objective

The objective of the proposed program would be to conduct research directed toward the investigation of selected additions and modifications for the experimental Model 2 incinerator, as described above, and the incorporation, in the experimental unit, of those changes mutually considered to be favorable, within the limits of the time and funds provided.

General Method of Procedure

Under the previous Task Order No. RR effort, it was shown that an air-flow rate of 800 cubic feet per minute at a static pressure of 4 inches of water was suitable for operation of the experimental Model 2 incinerator at burning rates in the range of from 85 to 138 pounds per hour. A commercially available blower-motor unit with this capacity was found that would essentially fit the space tentatively provided for this purpose in the experimental incinerator. This is the No. 22 Volume Fan (Buffalo Forge Company), with the rotor mounted directly on the horizontal shaft of a 3,500-rpm motor; the power required would be 1-1/2 horsepower, based on 3-phase, 60-cycle, 220-volt alternating current. A purchase order was placed recently for this blower-motor unit as part of the current Task Order No. RR effort.

Under the proposed research program, it is currently contemplated that an inspection port or opening with a cover would be installed at the rear of the blower compartment, to facilitate installation and to provide access to the blower-motor unit for inspection and/or maintenance such as lubrication. The blower-motor unit would then be mounted in a conventional manner (with the shaft horizontal) in the lower 22-inch-high section or compartment of the experimental incinerator. If the clearance between the air inlet of the blower and the front part of the 22-inch-diameter shell was found to restrict the air flow, the blower could be shifted slightly to the rear of its compartment by arranging for a slight overhang of the motor into the inspection opening; this arrangement might

necessitate bulging the cover of this opening outward to the extent of 1 or 2 inches. Longitudinal slots would be provided in this cover, to allow for the entry of air into the blower compartment; as it flowed toward the inlet of the blower, the air would cool the motor.

With this arrangement, the air would discharge upward from the blower into a plenum chamber which would probably occupy the upper 5 inches of the blower compartment; and would then enter the combustion-chamber section of the experimental incinerator (above the flange) through the turning vanes already provided in the plate which separates the blower and combustion-chamber compartments. A special type of damper and associated components would probably be designed, experimentally fabricated, and installed to fit within the 5-inch-high plenum chamber; this equipment would facilitate the entry of the air into the plenum chamber.

For safety reasons, a mechanical interlock of some type would be devised and installed that would operate between the outside handle of the damper and the latch on the loading door. This would insure that the loading door could not be opened inadvertently while the combustion air was flowing.

In the interest of reducing the noise stemming from the mechanical vibration of the blower and from the air movement, consideration would be given to lining the inside of the blower compartment, wherever possible, with a suitable sound-absorbent material.

The radiation of heat from the exposed surfaces of the experimental Model 2 incinerator has been very low. However, any appreciable length of bare stack within a room would give off considerable heat.

Consequently, in the proposed program, the heat shielding provided by various stack arrangements would be reviewed and, as discussed with your technical representative on March 22, 1960, consideration would be given to providing the means for cooling the exterior surface of the first 24-inch length of vertical stack above the experimental unit. A concentric, exterior radiation shield with some movement of air achieved in the annular space by natural draft or forced-air circulation is currently envisioned for this application.

A panel board for the temperature indicator and static-pressure gage would be provided with mounting brackets to facilitate attachment either to the experimental unit or to an adjacent wall. The motor-starting switch would be provided with sufficient electric cable to permit mounting on an adjacent wall.

After these additions and modifications were investigated as indicated above, those which were mutually considered to be favorable would be incorporated in the experimental unit, within the limits of the time and funds provided. Then, the performance of the integral blower-motor unit would be evaluated by conducting a few burning experiments and comparing the data with those previously obtained from the experimental unit equipped with an external blower-motor unit. It is planned that two intermittent-feeding combustion experiments, which would be designed to operate at burning rates corresponding to the highest and lowest rates attained previously, would be repeated in the experimental unit equipped with the integral blower-motor assembly; a total of 200 pounds of paper would be burned in each experiment. Also, an 8-hour continuous burning

operation would be performed using a typical assortment of the five kinds of paper utilized previously in burning experiments. It is believed that the data so obtained would provide a good basis for comparison, and thus for evaluation of the performance of the experimental Model 2 incinerator with an integral blower and motor unit.

During the course of the proposed evaluation, the operation of the experimental unit would be demonstrated to your technical representatives. Any mutually agreed upon minor modifications stemming from such demonstrations would be incorporated in the experimental incinerator, within the limits of the time and funds provided. At the end of the proposed research period, the experimental incinerator, including a section of "shielded" stack and temperature- and pressure-indicating instruments, would be submitted to your technical representative for field evaluation.

It is emphasized that every effort would be made to expedite the performance of the proposed research. If, as expected, the results of the proposed effort are favorable, it is currently contemplated that the experimental unit could be made available to your technical representative within approximately two months from the start of the additional research period proposed herein.

It is understood that the preparation of working drawings for use in connection with the possible fabrication of additional units of this type by commercial organizations would not be included in the additional research proposed herein. If desired, this further effort could be considered later and appropriate action taken under another contractual arrangement.

Reports and Liaison

Monthly letter reports would be submitted to keep your technical representative informed of the progress of the proposed research program. These would be supplemented by meetings and telephone discussions with your technical representative. At the conclusion of the proposed research period, a summary report describing the results of the research on the experimental Model 2 incinerator would be submitted.

Duration and Costs

It is proposed that the contract provide for an additional three-month period of research, with an increase in the estimated appropriation of $5,268, which includes an increase in the fixed fee of $298. A general breakdown of the estimated appropriation increase is attached.

The Contract

The proposed contract would be a period-basis research agreement, consistent with our current contractual arrangements and providing only for a fixed period of research leading toward the objective outlined in this proposal.

April 5, 1960

If you should have any questions with regard to this proposal, please let us know. Any inquiries of a contractual nature may be directed to [redacted] at Extension 159. 25X1

Very truly yours,

[redacted] 25X1

KES:mlm

In Duplicate